

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

The Connecticut Light and Power Company)	Docket No. 292
Application for a Certificate of Environmental)	
Compatibility and Public Need for the Construction)	
and Operation of 8.7 Miles of New 115-kV Electric)	
Transmission Cables Extending from CL&P's)	
Existing Glenbrook Substation in the City of)	
Stamford, through the Town of Darien, to CL&P's)	
Existing Norwalk Substation in Norwalk, Connecticut.)	October 13, 2004

PREFILED TESTIMONY OF ISO NEW ENGLAND INC.
BY RICHARD V. KOWALSKI

I. WITNESS EXPERIENCE

Q. Please state your name, title and business address.

A. Richard V. Kowalski
Manager, Transmission Planning
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040

Q. What positions have you held at ISO and what have your responsibilities been?

A. As the Manager, Transmission Planning of ISO New England Inc. ("ISO"), my responsibilities include bulk power system planning, NEPOOL Open Access Tariff transmission service studies, and interregional coordination studies. I am involved in all applications for upgrades to the transmission system in New England, including those which have made with respect to needed improvements in Southwest Connecticut in the last few years. Prior to my current position, I served ISO since 1997 as Principal Engineer. Before joining ISO, I was a Senior Engineer with New England Power Planning (NEPLAN), the planning arm of

NEPOOL from 1987 to 1997, with key responsibilities in bulk power system analysis and planning and interregional coordination studies. My career began with American Electric Power in 1979, where I held engineering positions of advancing responsibility in bulk power system operational analysis and interregional coordination until joining NEPLAN in 1987. My professional biography is attached hereto.¹

O. Have you previously testified before the Connecticut Siting Council?

A. Yes, I testified in Docket 217 regarding Northeast Utilities Service Company's application for a 345kV line from Plumtree Substation in Bethel to Norwalk and in Docket 272 regarding the joint application of Connecticut Light & Power Company and The United Illuminating Company for a 345kV transmission facility from Scovill Rock Switching Station in Middletown to Norwalk Substation in Norwalk.

Q. Is the information presented in this testimony true and correct to the best of your knowledge and belief?

A. Yes.

II. SUMMARY OF TESTIMONY

Q. Please summarize your testimony.

A. The Norwalk-Stamford area is one of the fastest- growing areas of electric demand in Connecticut, and it needs additional transmission capacity to be able to import sufficient power to be able to meet need in the foreseeable future. ISO also considers the electricity delivery system in Southwestern Connecticut to be

¹ ISO Exhibit 1.

unreliable. Given the present and predicted future composition of generating units and electric demand in that part of the state, transmission system reinforcements are required to enable consumers of electricity in that area to receive reliable electricity service in accordance with regional reliability standards.

Pursuant to its obligation as the region's transmission system planner, with responsibility to assess and develop a long-range transmission expansion plan, ISO seeks to identify solutions to expected transmission system problems while there is still time to permit, design and construct a solution. ISO has identified a "full loop" 345-kV transmission line, located in Southwestern Connecticut, as a long-term response to its concerns about electricity service meeting NEPOOL Reliability Standards. A "full loop" would consist of the 345-kV transmission facilities addressed in Siting Council Dockets 217 and 272. The transmission cables proposed by The Connecticut Light and Power Company ("CL&P") in this proceeding are a necessary adjunct to the planned full loop and is needed to establish a strong system which will provide reliable electric service to growing demand in Southwest Connecticut, including the Norwalk-Stamford area.

III. ISO'S MISSION AND RESPONSIBILITIES

Q. Why was ISO established?

A. The "Independent System Operator" concept was developed by the Federal Energy Regulatory Commission ("FERC") as part of the framework to support

competitive electricity markets. In FERC Order 888² issued in 1996, FERC identified key Independent System Operator principles as: providing independent, open and fair access to the region's transmission system; establishing a non-discriminatory governance structure; facilitating market based wholesale electricity rates; and ensuring the efficient management and reliable operation of the regional bulk power system.

ISO was established to be the Independent System Operator of the New England bulk power grid on July 1, 1997, and it assumed certain operating and transmission reservation responsibilities which had previously been carried out by NEPOOL.³ In May, 1999, ISO commenced administration of the restructured wholesale electricity marketplace for the region.⁴ In June, 2001, FERC conferred authority on ISO to be responsible for the regional transmission planning process.⁵ In June, 2003, FERC confirmed ISO's authority to approve planning for upgrades and changes to supply and demand-side resources.⁶ In March, 2004, FERC granted ISO status as a Regional Transmission Organization ("RTO"),

² Promoting Wholesale Competition Through Open Access, Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, Order No. 888, 75 FERC ¶ 31,036 (1996)(establishing principles for ISO's operation and governance).

³ New England Power Pool, Order Conditionally Authorizing Establishment of an Independent System Operator and Disposition of Control Over Jurisdictional Facilities, 79 FERC ¶ 61,374 (1997)(authorizing formation of ISO).

⁴ New England Power Pool, Order Conditionally Accepting New and Revised Market Rules, 87 FERC ¶ 61,045 (1999)(authorizing ISO-NE to administer the restructured wholesale electricity marketplace).

⁵ ISO New England Inc. & New England Power Pool, Order On Rehearing Requests and Compliance Filings, 95 FERC ¶ 61384 (2001)(authorizing ISO to oversee regional transmission planning).

⁶ New England Power Pool & ISO New England Inc., 103 FERC ¶ 61,304 (2003) (accepting October 2001 compliance filing as to the directive regarding Sections 18.4 and 18.5 of the Restated NEPOOL Agreement, and stating that "[w]e are persuaded by ISO-NE's arguments that it is the appropriate authority to approve planning for transmission upgrades and changes to supply and demand-side resources.").

79 subject to the fulfillment of certain conditions which are in the process of being
80 satisfied.⁷

81 *Q. Does ISO make any profit from its role as the Independent System Operator?*

82 A. No. ISO complies with FERC Order No. 889.⁸ In this regard, ISO is an
83 independent, private, non-profit, non-stock, company. It therefore has no
84 shareholders, and its Directors, employees and consultants are barred from being
85 employed by or owning shares in NEPOOL Market participants. Its budget is
86 reviewed and approved annually by FERC, and ISO's Tariff only recoups its
87 annual expenses. Consequently, neither ISO nor its directors, employees or
88 consultants, would experience a pecuniary benefit from the Siting Council's
89 approval of the Application in this proceeding.

90 *Q. What are ISO's mission and responsibilities?*

91 A. ISO is responsible for managing the New England region's bulk electric power
92 system, operating the wholesale electricity market, administering the region's
93 Open Access Transmission Tariff, and conducting centralized system planning.
94 More specifically, ISO's responsibilities include independently operating and
95 maintaining a highly reliable bulk transmission system, promoting efficient
96 wholesale electricity markets, and working collaboratively and proactively with
97 state and federal regulators, NEPOOL Participants, and other stakeholders.
98 NEPOOL Participants include generators, transmission owners, marketers,
99 municipalities and "end users."

⁷ Order Granting RTO Status Subject to Fulfillment of Requirements and Establishing Hearing and Settlement Judge Procedures 106 FERC ¶ 61,280 (2004)(granting ISO-New England RTO status).

⁸ Open Access Same-Time Information System Conduct, Order No. 889, 75 FERC ¶ 61,078 (1996)(rules establishing and governing Open Access Same-Time Information System).

Pursuant to this mission, ISO must maintain a level of system reliability that meets criteria established by NEPOOL, the Northeast Power Coordinating Council (“NPCC”) and the North American Electric Reliability Council (“NERC”). NEPOOL Reliability Standards, which are based on NERC Planning Standards, are found in NEPOOL Planning Procedure No. 3 (July 9, 1999).

Q. What is ISO's role in operating the region's power grid system?

A. ISO operates the power grid for the six-state New England region, which includes approximately 350 generating facilities connected by approximately 8,000 miles of transmission lines and serves electricity in real time to more than 14 million New England residents and businesses. Operators in ISO's Control Center centrally dispatch this system based on the economic merit order of generating resources at any given time to match the region's electric load.

Q. What is ISO's role in conducting regional transmission planning?

A. ISO is responsible for conducting long-term system planning for the New England region. It discharges this responsibility by developing a regional transmission plan (“RTEP”) through an open process and through participation of, and review by, interested parties in New England, including state regulators and NEPOOL market participants. The RTEP is updated annually.

Each RTEP summarizes results from a yearlong regional planning effort that examines system needs throughout New England. The RTEP is a comprehensive electrical engineering assessment comprised of numerous studies and analyses of New England's bulk electric power system. The RTEP is intended to provide information to the wholesale electricity marketplace on power

123 system problems and the needs that may be addressed through investment in
124 market solutions such as investment in generation, merchant transmission
125 facilities, distributed resources and demand response programs. If the market
126 does not respond with adequate solutions to defined system needs, ISO is charged
127 with providing a coordinated transmission plan that identifies appropriate
128 upgrades for reliability and economic needs. The plan would be implemented
129 only after market solutions have been considered.

130 *Q. Does the RTEP study process focus on specific geographic areas?*

131 A. The RTEP study process included the development of “RTEP sub-areas” based on
132 electrical interfaces in the system to evaluate region-wide reliability and economic
133 indicators, including a Southwest Connecticut RTEP sub-area (“SWCT”)
134 covering more than 50 municipalities in South and Central Connecticut, a
135 Norwalk-Stamford sub-area covering 14 municipalities in Fairfield County within
136 the SWCT sub-area, and a Connecticut sub-area (“CT”) covering the remaining
137 northern and eastern portions of the state.

138 *Q. Who conducts the RTEP process?*

139 A. ISO conducts and directs the studies that comprise the RTEP with the advice of
140 the Transmission Expansion Advisory Committee (“TEAC”). The TEAC is
141 composed of a wide variety of regional stakeholders as may change from time to
142 time, including NEPOOL Participants (such as generator owners, marketers, load
143 serving entities and transmission owners), governmental representatives, state
144 agencies (including those participating in the New England Conference of Public
145 Utilities Commissioners), representatives of local communities, and consultants.

146 The TEAC meets regularly throughout the year, and TEAC meetings are open to
147 any interested party and have included representatives of the Connecticut
148 Department of Public Utility Control, the Office of Consumer Counsel (“OCC”),
149 and the Connecticut Attorney General’s Office.

150 *Q. Can you briefly summarize the conclusions drawn by the RTEP process with*
151 *respect to Southwest Connecticut?*

152 A. Yes, the Regional Transmission Expansion Plan issued in October, 2001
153 (“RTEP01”)⁹ identified the system in Southwest Connecticut as having severe
154 reliability problems whenever the largest single generation source in the SWCT
155 sub-area is unavailable, and RTEP01 recommended feasibility studies to examine
156 alternatives and cost estimates for major transmission upgrades to increase
157 imports to the SWCT and Norwalk-Stamford sub-areas.

158 *Q. Were the studies recommended by RTEP01 performed?*

159 A. ISO, CL&P and UI personnel formed a working group (the “Working Group”)
160 which performed several studies¹⁰ which indicated the need for a full 345kV
161 transmission loop from Bethel to Norwalk (“Phase I”) and from Middletown to
162 Norwalk (“Phase II”). These studies led to the proposals submitted to the Siting
163 Council for approval in Dockets 217 and 272. In December 2002, the Working

⁹ See <http://www.iso->

¹⁰ ne.com/smd/transmission_planning/Regional_Transmission_Expansion_Plan/RTEP_2001/
The Working Group studies include (a) Southwestern Connecticut Reliability Study – Interim Report (“Interim Report”), which covered the initial phase of the thermal, voltage and short-circuit analysis; (b) Southwestern Connecticut Reliability Study, Final Power-Flow, Voltage and Short Circuit Report, (December, 2002) (“Final Report”); (c) Comparative Analysis of a 345 kV Plumtree-Norwalk Overhead Line Versus 2 – 115 kV Cables from Plumtree-Norwalk (December, 2002,)(“Comparison Study”); (d) Southwest Connecticut Electric Reliability Study, 345-kV Plumtree – Norwalk Project Final Power-Flow, Voltage and Short-Circuit Report (“Phase I Report”); and (e) Southwest Connecticut Reliability Study, Comparison of Middletown to Norwalk Project vs. East Shore Alternative (issued in February, 2004) (“East Shore Study”). All of these reports form the Southwestern Connecticut Reliability Study.

164 Group concluded that a 345kV transmission line would also need to be extended
165 from Norwalk to the Glenbrook. The need for this transmission improvement
166 was presented to the TEAC in New Britain, Connecticut in December, 2002 at
167 TEAC13.¹¹

168 *Q. Have subsequent RTEP reports further examined the system in SWCT and*
169 *Norwalk-Stamford sub-areas?*

170 A. Subsequent RTEP reports issued in November, 2002 and November, 2003
171 (respectively referred to as “RTEP02” and “RTEP03”) reported extensively on
172 problems in the SWCT and Norwalk-Stamford sub-areas. RTEP02
173 recommended proceeding with 345kV Phases I and II transmission upgrades to
174 SWCT.

175 The Executive Summary of RTEP03¹² stated that the most urgent system
176 reliability need in New England continues to be in the SWCT and Norwalk-
177 Stamford sub-areas (RTEP03, Section 5.4.5, p.32), again warning that the existing
178 transmission system in Southwest Connecticut can neither provide for significant
179 generation expansion nor fully utilize the area’s generating resources during times
180 of need.

181 *Q. Was the 345kV transmission line from Norwalk to Glenbrook included in the*
182 *RTEP?*

¹¹ See http://www.iso-ne.com/Committees/Transmission_Expansion_Advisory_Committee/TEAC13_Minutes.doc. TEAC meetings are referred to in numerical sequence such that “TEAC13” is the thirteenth TEAC meeting.

¹² See http://www.iso-ne.com/smd/transmission_planning/Regional_Transmission_Expansion_Plan/RTEP_2003/

183 A. While the general need for Norwalk-Stamford transmission improvements has
184 been identified since RTEP01, a 345kV transmission cable was specifically
185 included in RTEP03 as a long-term response to such needs. It was subsequently
186 determined, however, that a 115kV transmission solution would be suitable to
187 meet demand for a number of years, and RTEP04 has approved such a solution as
188 long as it can be upgraded in the future expansion to 345kV.

189

190 **IV. THE RELIABILITY OF THE TRANSMISSION SYSTEM SERVING THE**
191 **STAMFORD-NORWALK AREA**

192 *Q. What criteria does ISO use in determining whether electricity service is reliable?*

193 A. ISO applies NERC, NPCC and NEPOOL reliability standards and utilizes
194 reasonable load forecasts and assumptions about the future availability of
195 generation units in assessing reliability under a variety of scenarios.

196 *Q. How many violations of NEPOOL Reliability Standards may occur before a*
197 *system is considered to be out of compliance?*

198 A. None. A system that has one violation of the criteria outlined in the NEPOOL
199 Reliability Standards is not in compliance.

200 *Q. Does ISO consider electricity service in the southwestern region of Connecticut,*
201 *including Norwalk-Stamford, to be reliable?*

202 A No. Under current assumptions about electric demand growth and available
203 generation in the area, the existing transmission system is incapable of importing
204 sufficient amount of electricity into and moving it reliably within the area.
205 Transmission system inadequacies could also hamper new generation from

206 addressing growing load in the region. The peak demand in the Norwalk-
207 Stamford area is approximately 2.5 times the total amount of local generation.

208 Given the natural occurrences of unexpected outages, there is concern that
209 local generating units may not be available when most needed. There is also
210 concern that units in key locations could be shut down due to a catastrophic or
211 other failure, either permanently or for an extended period for replacement. As a
212 result, there must be a robust transmission system in place to import needed
213 electricity into and around this area.

214 *Q. Won't the proposed Phase I and Phase II improvements expected to increase the*
215 *area's ability to import electricity to meet growing demand?*

216 *A.* Yes, and they strengthen the system in the area east of the Norwalk substation.
217 However, the system from Norwalk to Stamford needs to be upgraded in order to
218 realize the supply benefits of the Phase I and Phase II improvements.
219 Furthermore, there are reliability concerns that need to be addressed.

220 *Q. What are the reliability concerns?*

221 *A.* Applicable NPCC and NEPOOL reliability standards require that a transmission
222 system must be able to respond to the possibility of various contingencies, such as
223 the loss of generating units, transmission lines, or combinations of both.
224 Otherwise, line flows could exceed emergency transmission line ratings and cause
225 disruption of service and outages to prevent damage to the electric system.
226 Operation of the Phase I line from Bethel to Norwalk will not resolve post-
227 contingency overloads on six lines in the Norwalk-Stamford area. Instead, the
228 new 345kV substation at Norwalk can be expected to increase the power flows on

229 existing lines between the Norwalk and Glenbrook substations, thereby increasing
230 the overloads on lines emanating from the Norwalk and Flax Hill substations. To
231 address reliability criteria violations related to contingent overloads, with or
232 without the Phase I line, on transmission lines serving the Glenbrook Substation, a
233 reinforcement of the system from Norwalk to Glenbrook is therefore necessary in
234 connection with Phase I. Such reinforcement would become increasingly
235 necessary in connection with Phase II.

236 *Q. Does ISO therefore believe there is a need for new transmission facilities in the*
237 *Glenbrook area?*

238 A. Yes, ISO believes that the unresolved reliability concerns described above, as
239 well as the need to serve growing demand in the Norwalk-Stamford area, pose the
240 need for upgrading transmission facilities between the Glenbrook and Norwalk
241 Substations. Additional analyses need to be undertaken by the Applicant to
242 assure that the Project will work without creating adverse effects on the electric
243 system. When the Applicant requests ISO approval of the Glenbrook Cables
244 Project under Section 18.4 of the Restated NEPOOL Agreement, ISO would
245 expect to see such further analysis, if not sooner.

246

247 **V. ANTICIPATED BENEFITS OF THE GLENBROOK CABLES PROJECT**

248 *Q. Please summarize the benefits ISO expects from the addition of new transmission*
249 *facilities to the bulk power system between Glenbrook and Norwalk?*

250 A. It is anticipated that the new transmission facilities from Norwalk to Glenbrook
251 should provide a new source of electric supply to Glenbrook Substation, thereby

252 enabling lower Fairfield County's growing demand for electricity to be met for a
253 number of years and deferring the expense of a 345kV upgrade. Such new
254 facilities should also allow a redistribution of power flows on transmission lines
255 now serving the Norwalk-Stamford area in a manner that should relieve post-
256 contingency flows on the 115-kV transmission lines serving the Darien Substation
257 and the Flax Hill Substation in western Norwalk.

258 *Q Does this conclude your testimony?*

259 *A. Yes.*

260

261